Malignant gliomas are the most common form of primary brain tumor in adults. Each year, about 12,000 new cases are diagnosed in the United States (Central Brain Tumor Registry of the United States, 2009). The tumors and their treatments often cause neurologic and cognitive dysfunction that make care for such patients more complex. Depending on the size and location of the tumor and type of treatment, patients may have a variety of neurocognitive issues (see Figure 1).

Neurocognitive testing can be helpful in determining a patient's cognitive deficits (National Institute of Neurological Disorders and Stroke, 2004). Identifying a cognitive deficit allows the family, patient, and healthcare team to develop a safe plan of care. Cognitive rehabilitation efforts may address issues caused by the tumor or by therapy, such as chemotherapy and radiation therapy. This typically is performed by a neurologist or neuropsychologist.

Alterations to the home often are necessary to improve safety and reduce risk of injury. Patients who are forgetful and at risk for wandering may require door alarms. “Child-proofing” items may be useful. For example, safety covers over stove knobs may reduce the risk of burns. A home emergency alert system may provide additional peace of mind for a patient and family if someone is not able to be home with the patient 24 hours per day.

Approximately 20%–62% of patients with malignant gliomas are at high risk for seizures at some point during diagnosis (Wen, MacDonald, & Gigas, 2005). Seizures often provide the first indication of an underlying tumor. Patients with temporal lobe tumors tend to have olfactory seizures or hallucinations and are at risk for focal or generalized seizures (Glantz & Edwards, 2003). Prolonged or permanent focal deficits can occur in patients with brain tumors following focal or generalized seizures (Glantz & Edwards, 2003). Such deficits may increase the significance of a patient’s impairment and further impact quality of life.

Frequent seizure activity requires aggressive anticonvulsant therapy. Anti-seizure medications are not without their side effects. Approximately 24% of patients on antiseizure medication will develop side effects that affect quality of life, thus requiring a change in medication (Glantz et al., 2000). The safe care of such patients is difficult without adequate family involvement or supportive care from the healthcare team.

Family members should be instructed on how to maximize safety during an episode of seizure activity. The priority should be to avoid trauma to the head. If possible, the patient should be lowered to a lying position and turned onto his or her right side to reduce the risk of aspiration.

Increased intracranial pressure is common in patients with malignant gliomas. Those who have had a gross total resection generally do not require long-term steroids. Those who have had a partial resection or biopsy typically need steroids for the duration of radiation and often long term (Kesari, Paleologos, & Vick, 2003). The degree of intracranial pressure generally is intensified when a person is lying prone. Sleeping on two pillows or using a foam wedge may help elevate the head to 30 degrees. This gentle elevation may reduce the risk of increasing peritumoral edema.

The most commonly used medication for peritumoral edema is dexamethasone, a corticosteroid typically given in doses of 4–24 mg daily, divided (Kesari et al., 2003). Patients who require long-term use of dexamethasone need additional medications to manage side effects. Prophylactic use of an H$_2$ antagonist or proton pump inhibitor should be considered to reduce indigestion and gastrointestinal ulceration (Marcus & McCauley, 1997). Initiating prophylaxis for _pneumocystis jiroveci_ pneumonia with sulfamethoxazole and trimethoprim, mepron, or dapsone is very important for all patients on steroids (Hughes, 1991). Pentamadine inhalation may be substituted. One of the most troubling side effects of dexamethasone is steroid myopathy. Patients can develop myopathy, generally of the long muscles, after only several weeks of steroid treatment. This may severely impact mobility, thus altering the level of independent function. This contributes to increased risk of additional medical complications such as thromboembolism.

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Venous thromboembolism occurs in 7%-28% of patients with high-grade gliomas (Wen et al., 2005). Typically, patients present with a symptomatic deep vein thrombosis or pulmonary emboli. An important safety issue for home monitoring and prevention is to maintain mobility and improve venous function with exercise. Caregivers should be instructed to assess the lower extremities for swelling or discomfort. They should be reminded to avoid massaging the legs, as this could dislodge a lower-extremity embolism, with potential injury to the lungs.

Because of the nature of brain tumors, families and caretakers bear the major responsibility of care. Patients with brain tumors often have a compromised ability to care for themselves independently. Neurobehavioral changes may present with varying degrees of deficits, and not all patients should be treated the same way. Several national and local agencies and associations exist to support patients with brain tumors and their families: the American Brain Tumor Association (www.abta.org), the National Brain Tumor Society (www.brain tumor.org/patientsfamilyandfriends), and the American Cancer Society (www.cancer.org).

Radiation therapy is one of the primary treatments for malignant glioma. It is associated with white-matter injury and damage to the normal vasculature (National Institute of Neurological Disorders and Stroke, 2004). Late effects of radiation can occur six months after radiation or several years later; thus, ongoing reevaluation with neurocognitive testing is important. Radiation therapy can cause fatigue and excessive daytime somnolence, which can impair quality of life for patients with high-grade tumors (Brown et al., 2006). Fatigue and somnolence tend to increase with the number of radiation fractions, reaching a maximum at the end of radiation.

Efforts have been made to improve cognition with medications. Meyers, Weitzner, Valentine, and Levin (1998) studied the effect of methylphenidate on neurobehavioral functioning in 30 patients with primary brain tumors. Methylphenidate 10 mg twice daily resulted in significant subjective and objective improvement. The study reported improvement in mood, cognition, functional status, fatigue, and stamina. This may contribute to an improved level of independence, thus a potentially improved quality of life. Other medications, such as modafinil and armodafinil, are being studied in patients with brain tumors to reduce fatigue, which may also improve cognition and cause less profound neurologic deficits.

The care and safety of patients with brain tumors often fall on primary caretakers and their families. Nurses, physicians, and psychosocial support must be proactive in educating patients and their families about the day-to-day risks of living with a brain tumor and the supports that are available. More research is needed to help improve care and quality of life for patients with malignant gliomas.

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